REMARKS

In the Office Action dated July 3, 2002, the drawings were objected to under 37 C.F.R. §1.84(p)(5) because reference numeral 7 was referred to in the specification with regard to Figure 2, but was not shown in Figure 2. The use of reference numeral 7 in the specification was the result of a word processing error, and reference numeral 7 has now been cancelled from the specification. Therefore, no change in Figure 2 is necessary.

Claim 1-10 and 13 were rejected under 35 U.S.C. §102(e) as being unpatentable over Boemmel et al., Claims 11 and 12 were rejected under 35 U.S.C. §103(a) as being unpatentable over Boemmel et al.

With regard to claim 1, the Examiner stated the Boemmel et al. reference discloses an electrical coil suitable for use as a gradient coil in a magnetic resonance apparatus having an electrical conductor, a carrier structure, a cooling device arrangement, and a heat insulator disposed between at least one section of the conductor and the carrier structure. The Office Action included the statement, at the top of page 3, that "Boemmel teaches that the cooling conduit consists of a plastic pipe in which the plastic acts as a heat insulator." The present Applicant acknowledges that the Boemmel et al. reference teaches that the cooling conduit can consist of a plastic pipe, but does not agree that Boemmel et al. teach that the plastic acts as a heat insulator. In fact, the teachings of the Boemmel et al. reference are exactly the opposite and the Boemmel et al. reference could not function for its intended purpose if the plastic pipe forming the cooling conduit did function as a heat insulator. For this reason and other reasons discussed below, the Boemmel et al. reference does not disclose a heat insulator disposed between a

conductor and a carrier structure in an electric coil for use as a gradient coil in a magnetic resonance apparatus as disclosed and claimed in the present application.

The Boemmel et al. reference discloses a flexible cooling arrangement, employing cooling conduits arranged in a curved or serpentine manner, disposed on a carrier sheet. The overall cooling arrangement is flexible so that it can be fitted (curved) between two adjacent gradient coils, such as two adjacent saddle coils, as shown in Figure 4 of the Boemmel et al. reference. One gradient coil is disposed on one side of the carrier structure (with no intervening structure or components of any type), and the other gradient coil is disposed next to the cooling conduit on the other side of the conduit/carrier structure combination.

Even though the cooling conduit intervenes between the carrier structure and the inner gradient coil shown in Figure 4 of the Boemmel et al. reference this does not constitute a heat insulator disposed between the carrier and that gradient coil, because the cooling conduit in Boemmel et al. is intended to function to deliver heat away from the gradient coils that is produced during the operation thereof. If the cooling conduit were a heat insulator, it would be incapable of performing its intended function of removing heat. In order for the cooling conduits in the Boemmel et al. arrangement to function as intended, they must be capable of receiving heat generated by the gradient coils and thereby allowing that heat to be carried away by the fluid flowing in the cooling conduits. This is made clear in the Boemmel et al. reference at column 2, in the paragraph beginning at line 50 wherein the importance of heat transmission, rather than heat insulation, is stressed. As noted above, in the Boemmel et al. reference one of the gradient coils is disposed directly adjacent the

carrier, and therefore it is clear that in the Boemmel et al. structure, insulation between the gradient coil and the carrier itself was not contemplated nor intended.

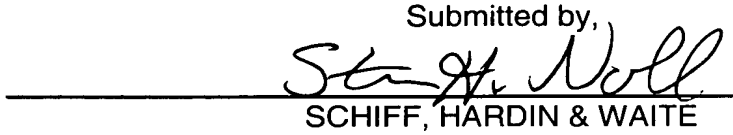
The Boemmel et al. reference therefore does not disclose all of the elements in independent claim 1 as arranged and operating in that claim, and therefore does not anticipate claim 1 nor any of the claims depending therefrom.

As to the rejection of claims 11 and 12 under 35 U.S.C. §103(a) based on the teachings of Boemmel et al., as discussed above the Boemmel et al. reference would not operate for its intended purpose if the material forming the cooling conduits were, to any significant extent, heat insulating. The teachings of Boemmel et al. reference therefore are contrary to the subject matter of claims 11 and 12, which embody the subject matter of claim 1 therein. Claims 11 and 12, therefore, would not have been obvious to a person of ordinary skill in the art based on the teachings of Boemmel et al.

Lastly, Applicant notes that Form 1449 which was submitted with the Information Disclosure Statement filed January 29, 2002, was attached to the Office Action, after being initialed by the Examiner. Applicant also filed an Information Disclosure Statement on July 30, 2001, but the Office Action did not include Form 1449 from that Information Disclosure Statement. A copy of the return postcard for the Information Disclosure Statement, indicating receipt at the Patent and Trademark Office on July 30, 2001 is attached hereto. The Examiner is requested to review the Patent and Trademark Office file and if that Information Disclosure Statement is not present in the file, the Examiner is requested to notify the undersigned counsel for the Applicant, and it will be resubmitted.

All claims of the application are therefore submitted to be patentable over the teachings of the Boemmel et al. reference, taken alone or in combination with any of the other references of record. Early reconsideration of the application is respectfully requested.

Submitted by,



(Reg. 28,982)

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

Please amend the paragraph beginning at page 6, line 11 as follows:

A heat insulator 13a enclosing the conductor 12 is arranged between the electrical conductor 12 and a carrier structure 15a of the gradient coil system 1a, for example a cast resin [7]. The heat insulator is fashioned of fibers and/or high-resistance foam and is composed of glass, ceramic, mineral materials and/or polymer materials, so that a thermal conductivity of the heat insulator 13a is less by a factor 3 than the thermal conductivity of the carrier structure 15a. Therefore, the conductor 12 can assume comparably high temperatures relative to the carrier structure 15a, and a cooling medium current can be operated with a high temperature drop in order to obtain high power densities. A structure-damaging alternating heating and cooling of the carrier structure 15a surrounding the electrical conductor 12 is thus prevented. Furthermore, a high temperature stability and therefore a high quality of magnetic resonance images is obtained for the means 14 for reducing non-homogeneity of the basic magnetic field, for example a passive shim device in a formation as iron sheets. In an embodiment, the electrical conductor 12 and the cooling pipe 11a are fashioned corresponding to the aforementioned German OS 198 39 987.